

July 13, 2001

HSA-10/B-88

Mr. Mats Heinevik
Blue Systems AB
Halleflundragatan 24
426 58 V. Frolunda
Sweden

Dear Mr. Heinevik:

In your June 27 letter addressed to the Director of the Federal Highway Administration's former Office of Engineering, you requested formal acceptance of your tensioned wire rope system (called Safence 350) as an National Cooperative Highway Research Program (NCHRP) Report 350 test level 3 (TL-3) traffic barrier. To support this request, you also sent copies of two test reports prepared by the VTI test laboratory in Linköping, Sweden under the direction of Messrs. Thomas Turbell and Jan Wenall. and video tapes of the two tests that were conducted. The test reports were both dated January 3, 2001 and identified as Test Report No. 56555 and Test Report No. 56556.

The Safence 350 wire rope barrier system test installation was approximately 116 meters long, including its anchorages. Its four 19-mm diameter steel cables were supported on 2100-mm long elliptically-shaped line posts spaced on 2500-mm centers. Each post was embedded 1110-mm in the ground and made from 4-mm thick steel and set in a compacted AASHTO Type M 147-65 soil. The top cable was set 930 mm above the ground with the remaining three cables spaced at 150 cm. Thus, the cable heights were 480 mm, 630 mm, 780 mm, and 930 mm. All four cables are attached to the traffic side of the posts. Once the cables are mounted on the posts, they are tensioned to a specified degree, the exact figure depending on the ambient temperature at the time of installation. This tension can vary from 800 kPa at 38 degrees Celsius to 3200 kPa at -40 degrees Celsius. Enclosure 1 is a schematic drawing of the Safence 350 as tested.

For test 3-10, an 907-kg vehicle impacted the wire rope at 102 km/h and an impact angle of 20 degrees. Maximum occupant impact velocity was 5.0 m/sec and maximum ridedown acceleration was reported as 8.1 g's. Dynamic deflection was 1.1 meters. For test 3-11, a 2036-kg pickup truck impacted the barrier at 104.0 km/h at 25degrees. Maximum occupant impact velocity was 4.4 m/sec and maximum ridedown acceleration was 6.6 g's. Dynamic deflection was 1.8 meters in this test.

Based on staff review of the information you provided, I concur that the 4-strand Safence 350, as tested, meets all evaluation criteria for an NCHRP Report 350 roadside barrier at test level 3 (TL-3) and it may be used on the National Highway System (NHS) when such use is proposed by the contracting agency. Since this product is made from steel and is proprietary, the provisions of Sections 635.410 and 635.411 of Title 23 Code of Federal Regulations are both applicable. Copies of each are enclosed for your ready reference (Enclosures 2 and 3, respectively).

You noted in your letter that testing to develop a crashworthy end terminal for this system has yet to be completed. I agree that the current terminal design may be used in the interim, provided it is located beyond the minimum clear zone or shielded with an accepted device such as a sand barrel array as stated in your letter.

Sincerely Yours,

(original signed by Frederick G. Wright, Jr.)

Frederick G. Wright, Jr.
Program Manager, Safety

3 Enclosures